

# Montgomery County Equipment & Maintenance Operations Center – EMOC Presentation to Town of Washington Grove

Department of General Services

Office of Special Projects



**Smart Growth Initiative**

August 1, 2011



Montgomery County Equipment & Maintenance Operations Center - EMOC

# Project Team

## ■ **Montgomery County**

- **David Dise – Director**
  - **Department of General Services**
- **Hamid Omidvar – Chief**
  - **Office of Special Projects**
  - **Department of General Services**
- **Rassa Davoodpour – Manager**
  - **Office of Special Projects**
  - **Department of General Services**

## ■ **Baker & Design Team**

- **Susan Garcia, OAQ – Project Manager**
- **Greg Shipley, AIA, LEED AP BD+C – Project Architect**
- **John F. Parker, CMLI – Landscape Architect**



# Project Design Consultants



**Architecture, Interior Design,  
Landscape Architecture,  
Environmental,  
Cost Estimating**

**Michael Baker Jr., Inc.**

3601 Eisenhower Ave.  
Alexandria, VA 22304  
PM: Susan Garcia, OAQ  
Architect: Greg Shipley, AIA, LEED AP BD+C  
Landscape Arch.: John Parker, CMLI



**Civil Engineering**

**Adtek Engineers, Inc.**

97 Monocacy Boulevard, Unit H  
Frederick, MD 21701  
Civil Eng.: Shawn Benjaminson, PE

**Structural Engineering**

**Adtek Engineers, Inc.**

10000 Virginia Manor Road, Suite 340  
Beltsville, MD 20705  
Structural Eng.: Cindy Ponafala, PE



**Equipment**

**Maintenance Design Group**

201 N. Charles Street, Suite 920  
Baltimore, MD 21201  
PM: Steve Radomski, AIA, LEED AP



**Mechanical, Plumbing, Fire  
Protection Engineering**

**S3E Klingemann, Inc.**

8001 Braddock Road, Suite 200  
Springfield, VA 22151  
PM: Mel Straus, PE  
Mechanical Eng.: Jeff Engel, PE  
Plumbing Eng.: Ernie Settles



**Electrical Engineering  
EPCM, Inc. Consulting  
Engineers**

9006 Fern Park Drive  
Suite B, 2<sup>nd</sup> Floor  
Burke, VA 22015  
Electrical Eng.: Bhupinder Sohi, PE



**Vehicle Fueling**

**Fuel Solutions, Inc.**

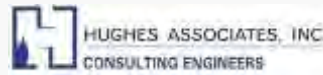
12340 Santa Monica Boulevard,  
Suite 133  
Los Angeles, CA 90025  
PM: Reb Guthrie



**Foodservice**

**Tricon Foodservice  
Consulting, Inc.**

380 Maple Avenue West, Suite L-5  
Vienna, VA 22180  
Senior Assoc.: Deborah Gemma



**Life Safety**

**Hughes Associates, Inc.**

3610 Commerce Drive, Suite 817  
Baltimore, MD 21227  
Senior Eng.: Ajay Prasad, PE



**Wetland Mitigation**

**Ecotone, Inc.**

P.O. Box 5, 1204 Baldwin Mill Road  
Jarrettsville, MD 21084  
Principal Ecologist: Jim Morris



**Commissioning**

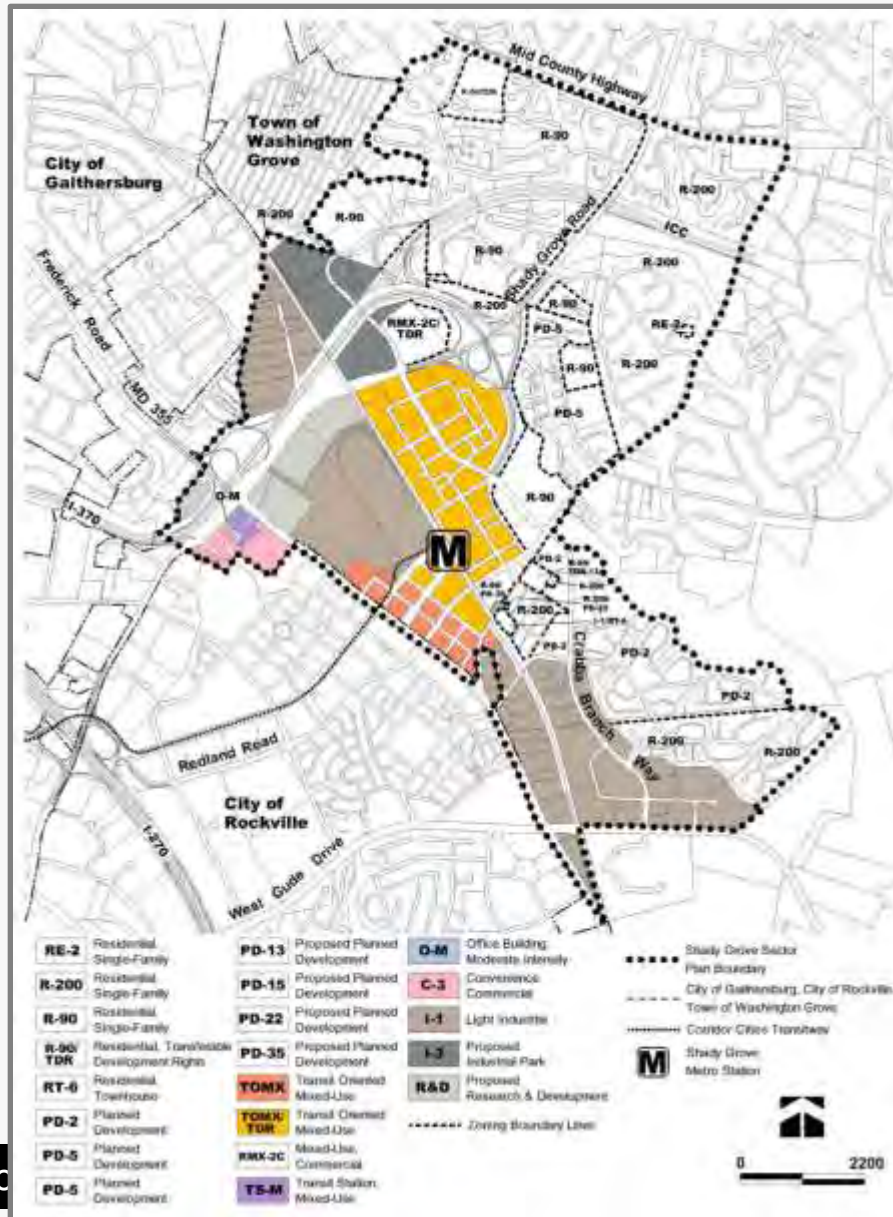
**Gretchen Coleman  
Commissioning Group, LLC**

7613 Countrywood Drive  
Roanoke, VA 24018  
Gretchen Coleman, PE, CCP,  
CxA



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# Shady Grove Sector Plan – Proposed Zoning



Approved and Adopted  
March 2006



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Center - EMOC

# Shady Grove Sector Plan – Neighborhood Site Concept



*Approved and Adopted  
March 2006*



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## Existing facilities at County Service Park - CSP



# Montgomery County Equipment Maintenance & Operations Center - EMOC

# New Location for EMOc



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# New Location for EMOC



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# Project Major Goals

- ✓ **Design a functional, state of the art facility**
- ✓ **Design a Green/Sustainable facility**
- ✓ **Design a project that fits best in the fabric of community**
  - ✓ Traffic
  - ✓ Sound
  - ✓ Pollution
  - ✓ Architecture
- ✓ **Deliver the project on time and within budget**



# Project Schedule

- ✓ **Design Complete** **1/2011**
- ✓ **Construction Start** **6/2011**
- **Construction Complete** **1/2013**



# Alternative ideas developed



**HIGHWAY SERVICES AND SALT BARN OPERATIONS**



**FLEET AND TRANSIT SERVICES**



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# New Site Plan

Salt Barn Operation  
(Roberts Oxygen)  
5.04 ac.

Highway Services  
(Casey 6)  
19.05 ac.

SHA Depot

ICC

Crabbs Branch Way  
Extended

Crabbs Branch Way

Transit and  
Fleet Services  
(Casey 7)  
16.94 ac.

Shady Grove Rd.



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# New Site Plan – Fleet & Transit Services



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# New Site Plan – Highway Services and Salt Barn Operations



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# Sustainable/ Green Design

## ✓ Site Planning to Maximize Natural Resources

- ✓ Minimize Footprint
- ✓ Stormwater Management, Reduce water consumption

## ✓ Facility and Site Design

- ✓ Less Dependence on Fossil Fuel Energy Sources
- ✓ Conserve Water Resources

## ✓ Operational Efficiencies

## ✓ Minimize Impact to Community

## ✓ Healthy and High Performance Workspaces



# Aerial View looking North-West



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# View from Shady Grove Road & Crabbs Branch Way



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# Shady Grove Road View of Transit and Fleet Services



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# Shady Grove Road View of Maintenance Building



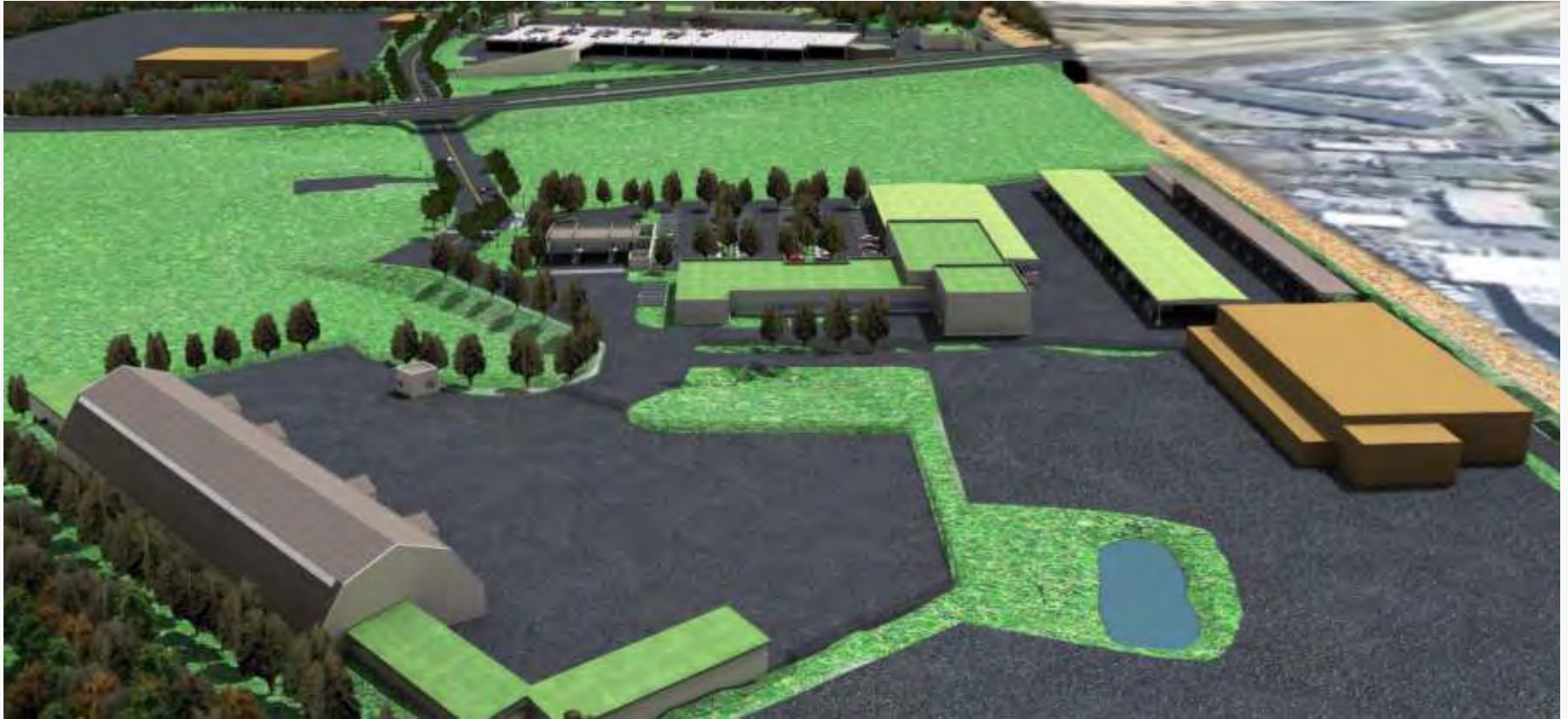
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# Crabbs Branch Way View of Parking Structure



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# Aerial View looking South-East



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# Crabbs Branch Way View of Highway Services



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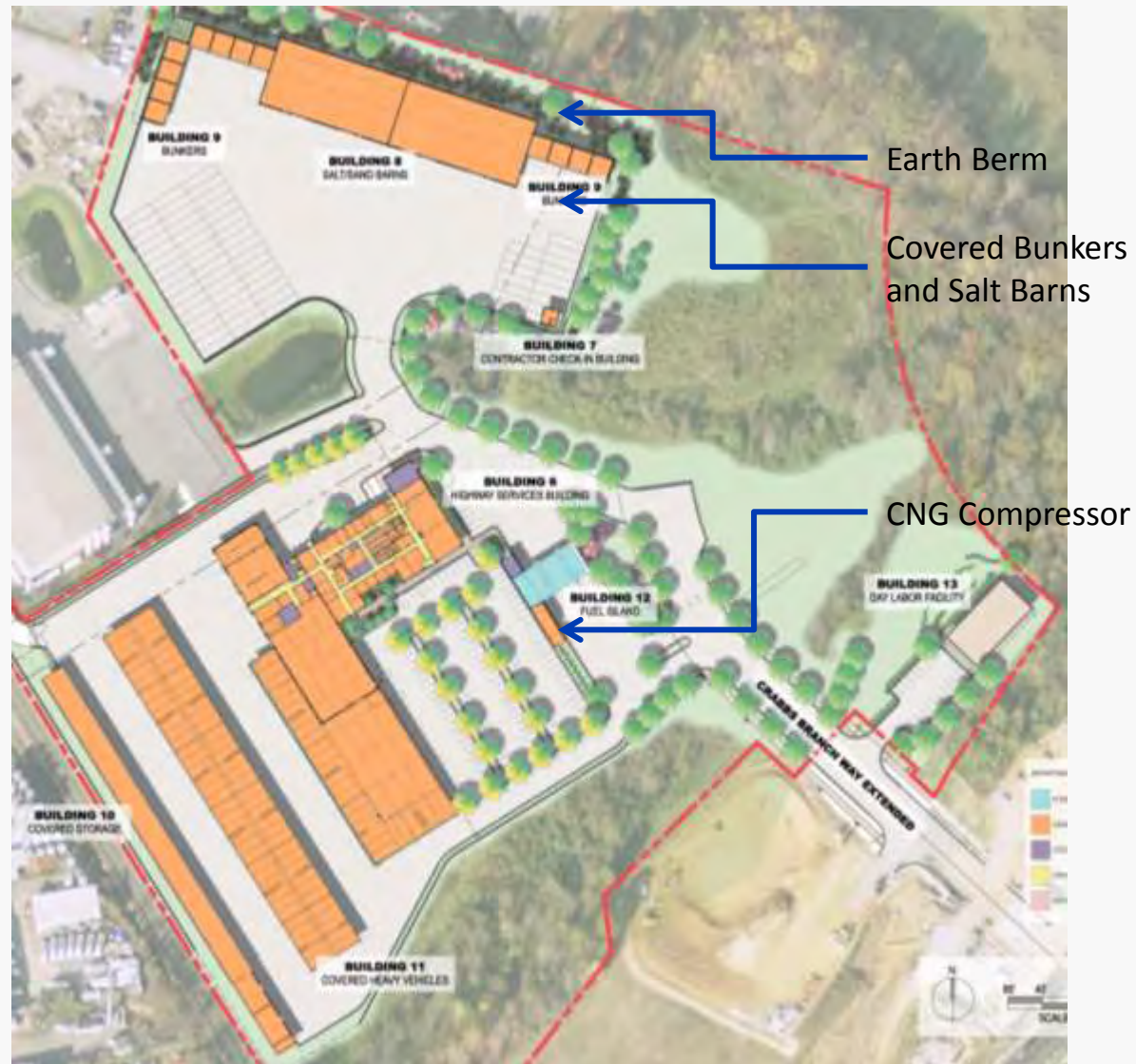
# Noise Generation and Mitigation

## Casey 6 and Roberts Oxygen

- ✓ Salt Barn and Bunkers aligned as screen wall
- ✓ Bunker design has CMU Infill above Cast-In-Place Concrete Walls
- ✓ Circulation designed to Minimize Backing
- ✓ (2) 20HP CNG Compressors enclosed by CMU Walls
- ✓ Rooftop HVAC unit on Building 6 adjusted by roof position/direction
- ✓ Earth Berms on North Side of Salt Barns and Bunkers

## Casey 7

- ✓ Shielded from Community by I-370 Fill
- ✓ Distance from Community
- ✓ Circulation designed to Minimize Backing
- ✓ (3) CNG Compressors enclosed by CMU Walls and placement is parallel to the Railroad at the furthest point on the site from Crabbs Branch Way and Shady Grove Road.



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# Salt Barns and Bunkers Elevations



[Salt Barn Yard Elevation](#)



[Green Buffer – Salt Barn Community Elevation](#)



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# Sustainable Strategies

## Project is planned to achieve LEED GOLD certification

- ✓ New facilities take less land than the existing facility
- ✓ New program and needs are larger than the existing program, but the new facilities design on less foot print than existing facilities by providing the first multi story depot for the county.
- ✓ Project has been coordinated with the community for Sound, view, traffic and other community related concerns
- ✓ Bus circulation allows on-site bus queuing to minimize impact to Crabbs Branch Way
- ✓ Active and passive noise reduction measures have already been proactively designed into the proposed project, including equipment location, operation, enclosures and building heights/orientation



# Partial List of Sustainable Features

- ✓ 23 spaces reserved for carpool.
- ✓ 100% of the average annual rainfall is treated by storm filters.
- ✓ 4.3 acres vegetative roofs - 75% of roof surface.
- ✓ Exterior lighting fully comply with LEED "Light Pollution Reduction requirements.
- ✓ Interior lighting in direct line of sight are automated to reduce 50% of their power from 11 pm to 5am.
- ✓ Automated treatment system will save 80% of water used in the wash process and discharge.
- ✓ Rainwater will be collected at the roof and will be used for the following functions: bus wash, chassis wash, toilets and urinals, and hose bibbs.
- ✓ The equipment and refrigerants for the EMOC facility have been selected to minimize or eliminate the emission of compounds that contribute to ozone depletion and global warming.
- ✓ The elevator's EcoDisc uses 60-70% less energy with no oil and no hole drilling
- ✓ Daylighting into vehicle maintenance bays through glazed panels and transoms.
- ✓ Solar lighting is provided on the parking roof
- ✓ 75 percent of the construction waste will be recycled .
- ✓ Air quality during construction will be maintained under a Construction IAQ Management Plan
- ✓ Wood products to contain no added chemical and pollutant source.
- ✓ MCG is dedicated to implementing and maintaining a green cleaning policy as it relates to purchasing cleaning products, janitorial paper products, and hand soaps as well as the use of cleaning equipment, storing hazardous materials, training of the Cleaning Contractor, and being aware of sensitive building occupants



# Vegetated Roofs and Roofs with High SRI Values

## Casey 7

16624 Crabbs Branch Way

Bldg #	Building Name	Bldg Footprint	Unit	Vegetative Roof	KEE Roof (SRI=98.54)	SSMR	Gravel	Mechanical Equip	Roof Pavers (SRI=39.0)	Metal Coping	Conc. Parking Deck	Asphalt Shingles
Building 1	Maintenance Building	66,889	SF	55,908	282	1,071	2,863	2,577	2,540	1,930	0	0
Building 2	Parking Building	106,213	SF	0	705	4,195	0	8	4	133	101,168	0
Building 3	Fare Collection Building	3,990	SF	3,042	0	0	332	70	140	406	0	0
Building 4	Fleet Service Facility	13,063	SF	11,057	0	0	793	135	152	926	0	0
Building 5	Storage Building	2,023	SF	1,541	0	0	250	0	0	232	0	0
<b>TOTAL - CASEY 7</b>		<b>192,178</b>		<b>71,548</b>	<b>987</b>	<b>5,266</b>	<b>4,238</b>	<b>2,790</b>	<b>2,836</b>	<b>3,627</b>	<b>101,168</b>	<b>0</b>
Percentage of Roof (Excludes Concrete Parking Deck)		91,010		79%	1%	0%	3%	0%	3%	4%	N/A	N/A

## Casey 6

17000 Crabbs Branch Way

Bldg #	Building Name	Bldg Footprint	Unit	Vegetative Roof	KEE Roof (SRI=98.54)	SSMR	Gravel	Mechanical Equip	Roof Pavers (SRI=39.0)	Metal Coping	Conc. Parking Deck	Asphalt Shingles
Building 6	Highway Services Building	58,703	SF	53,996	0	150	2,211	362	388	1,596	0	0
Building 7	Contractor Check-in Building	400	SF	0	314	0	0	0	0	86	0	0
Building 8	Salt/Sand Barns	NA	SF									NA
Building 9	Bunkers	8,051	SF	7,338	0	0	713	0	0	0	0	0
Building 10	Covered Storage Building	13,974	SF	0	13,848	0	0	0	0	126	0	0
Building 11	Covered Heavy Vehicles	31,230	SF	30,029	0	0	1,201	0	0	0	0	0
Building 12	Fuel Island Building	4,977	SF	0	4,768	0	0	0	0	209	0	0
Building 13	Day Labor Facility	NA	SF									NA
<b>TOTAL - CASEY 6</b>		<b>117,335</b>	<b>SF</b>	<b>91,363</b>	<b>18,930</b>	<b>150</b>	<b>4,125</b>	<b>362</b>	<b>388</b>	<b>2,017</b>	<b>0</b>	<b>0</b>
Percentage of Roof		117,335		78%	16%	0%	4%	0%	0%	2%	N/A	N/A

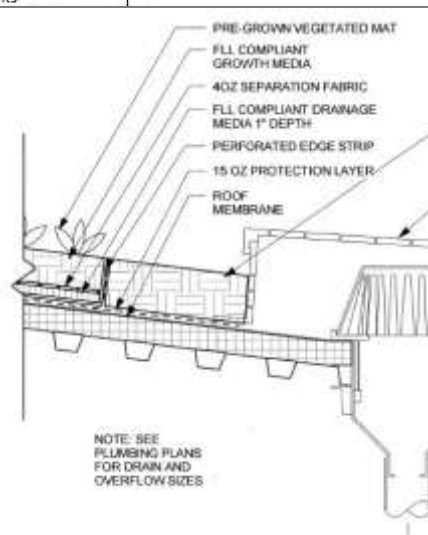
<b>TOTAL - CASEY 6 &amp; 7</b>		<b>309,513</b>	<b>SF</b>	<b>162,911</b>	<b>19,917</b>	<b>5,416</b>	<b>8,363</b>	<b>3,152</b>	<b>3,224</b>	<b>5,644</b>	<b>101,168</b>	<b>0</b>
Percentage of Roof		208,345	<b>SF</b>	<b>78%</b>	<b>10%</b>	<b>3%</b>	<b>4%</b>	<b>2%</b>	<b>2%</b>	<b>3%</b>	<b>N/A</b>	<b>N/A</b>

4.83 acres (roof)

## KEY:

	Meets credit requirements
	Does not meet credit requirements
	Not counted towards this credit

Building 8 and 13 are not included in LEED certifi



# Plant List

## TREES

QTY	KEY	GENUS	SPECIES	VARIETY	COMMON NAME	CALIPER	HEIGHT	REMARKS
54	AS	Acer	saccharum		Sugar Maple	3 - 3 1/2"	14 - 16'	B&B, full uniform crown, symmetrical branching, full specimen
12	BN	Betula	nigra		Riverbirch	1 1/2" min.	8 - 10'	B&B, multi-trunk, 3 cane minimum, full symmetrical branching
45	CC	Cercis	canadensis		Eastern Redbud	1 1/2" min.	8 - 10'	B&B, multi-trunk, 3 cane minimum, full symmetrical branching
7	CP	Crataegus	phaenopyrum		Washington Hawthorne	1 1/2" min.	8 - 10'	B&B, uniform branching, full specimen
47	GTI	Gleditsia	triacanthos inermis		Thornless Common Honeylocust	3 - 3 1/2"	14 - 16'	B&B, full uniform crown, symmetrical branching, full specimen
21	IO	Ilex	opaca		American Holly	3 1/2 - 4"	6 - 8'	B&B, full to ground with good seasonal flush
16	MV	Magnolia	virginiana		Sweetbay Magnolia	1 1/2" min.	8 - 10'	B&B, multi-trunk, 3 cane minimum, full symmetrical branching
20	PA	Picea	abies		Norway Spruce	3 1/2 - 4"	6 - 8'	B&B, full to ground with good seasonal flush
10	PL	Platanus	acerifolia		London Plane Tree	3 - 3 1/2"	14 - 16'	B&B, full uniform crown, symmetrical branching, full specimen
32	PY	Prunus	yedoensis		Yoshino Cherry	2 1/2" min.	8 - 10'	B&B, uniform branching, full specimen
55	PM	Pseudotsuga	menziesii		Douglas-Fir	3 1/2 - 4"	6 - 8'	B&B, full to ground with good seasonal flush
34	QR	Quercus	rubra		Red Oak	3 - 3 1/2"	14 - 16'	B&B, full uniform crown, symmetrical branching, full specimen
7	QC	Quercus	coccinea		Scarlet Oak	3 - 3 1/2"	14 - 16'	B&B, full uniform crown, symmetrical branching, full specimen
58	TC	Tsuga	canadensis		Eastern Hemlock	3 1/2 - 4"	6 - 8'	B&B, full to ground with good seasonal flush
7	ULA	Ulmus	americana	'Patriot'	Patriot American Elm	3 - 3 1/2"	14 - 16'	B&B, full uniform crown, symmetrical branching, full specimen

## SHRUBS

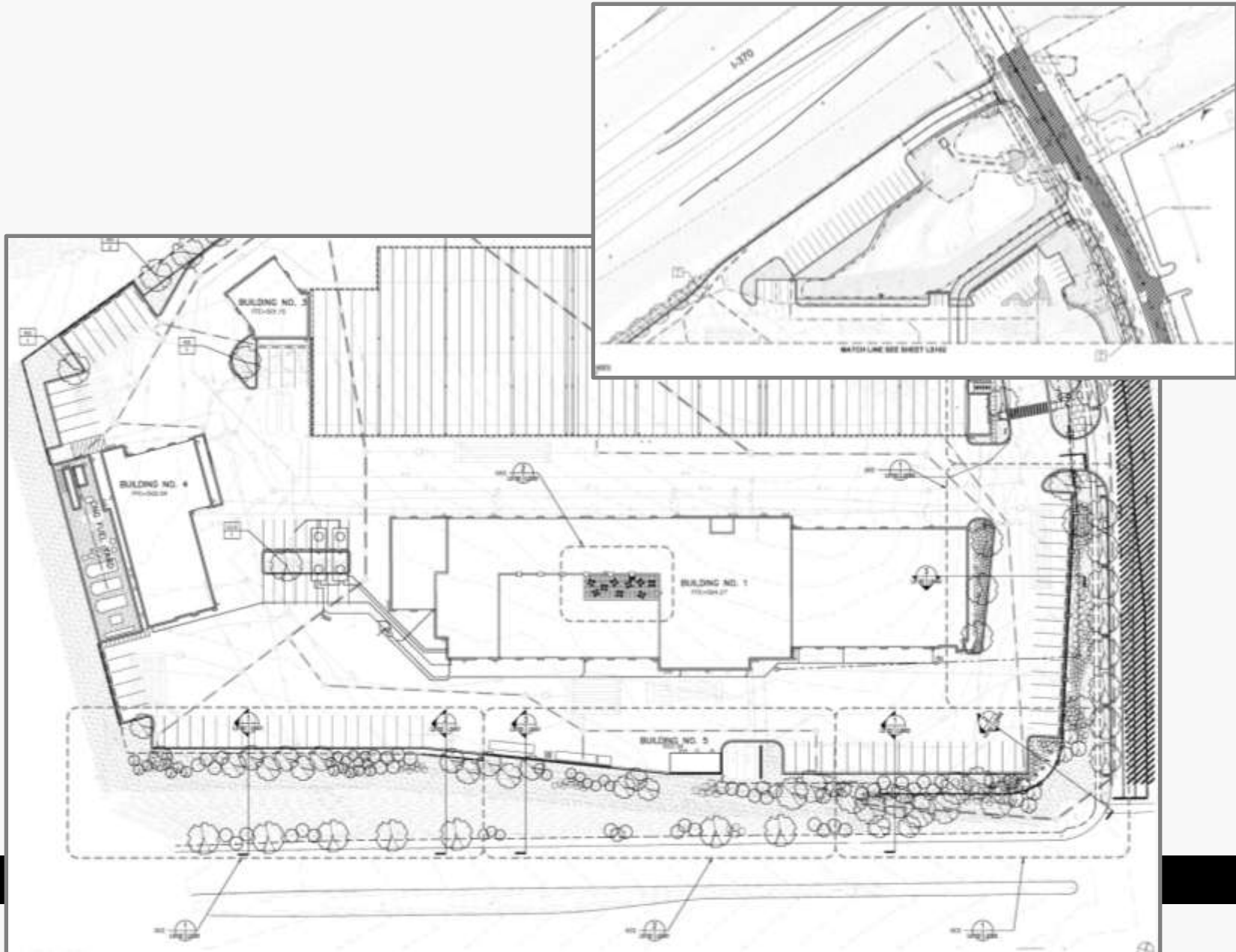
QTY	KEY	GENUS	SPECIES	VARIETY	COMMON NAME	CALIPER	HEIGHT	REMARKS
75	AD	Rhododendron		'Delaware Valley White'	Delaware Valley White Azalea		18 - 24"	3 gal., healthy, vigorous, well-rooted & established in container
39	CA	Clethra	alnifolia		Clethra		24 - 30"	B&B, healthy, vigorous, well-rooted & established
33	CS	Cornus	sericea		Red Osier Dogwood		24 - 30"	B&B, healthy, vigorous, well-rooted & established
16	DO	Daphne	odora	'aureomarginata'	Winter Daphne		18 - 24"	3 gal., healthy, vigorous, well-rooted & established in container
16	EA	Euonymus	alatus	'Compacta'	Winged Euonymus		18 - 24"	3 gal., healthy, vigorous, well-rooted & established in container
52	IB	Ilex	cornuta	'Burfordii-nana'	Dwarf Burford Holly		24 - 30"	3 gal., healthy vigorous, well-rooted & established in container
4	IC	Ilex	crenata	'Convexa'	Japanese Convexa Holly		18 - 24"	3 gal., healthy vigorous, well-rooted & established in container
44	IG	Ilex	glabra	'Compacta'	Inkberry Holly		18 - 24"	3 gal., healthy vigorous, well-rooted & established in container
68	IV	Itea	virginica	'Henry's Garnet'	Henry's Garnet Virginia Sweetpire		18 - 24"	3 gal., healthy vigorous, well-rooted & established in container
28	IX	Ilex	verticillata	'Cacapon'	Winterberry Holly		24"-30"	5 gal., healthy vigorous, well-rooted & established in container
59	RP	Rosa		'Radcon'	Pink Knock Out Rose		24"-30"	3 gal., healthy vigorous, well-rooted & established in container
132	TM	Taxus	x media	'Densiflorus'	Densiflorus Yew		18 - 24"	B&B, healthy vigorous, well-rooted & established
15	VP	Viburnum	x pragens		Pragens Viburnum		3.5-4'	7 gal., healthy vigorous, well-rooted & established in container
149	VR	Viburnum	rhytidophyllum		Leatherleaf Viburnum		30 - 36"	B&B, healthy, vigorous, well-rooted & established

## GROUND COVERS AND VINES

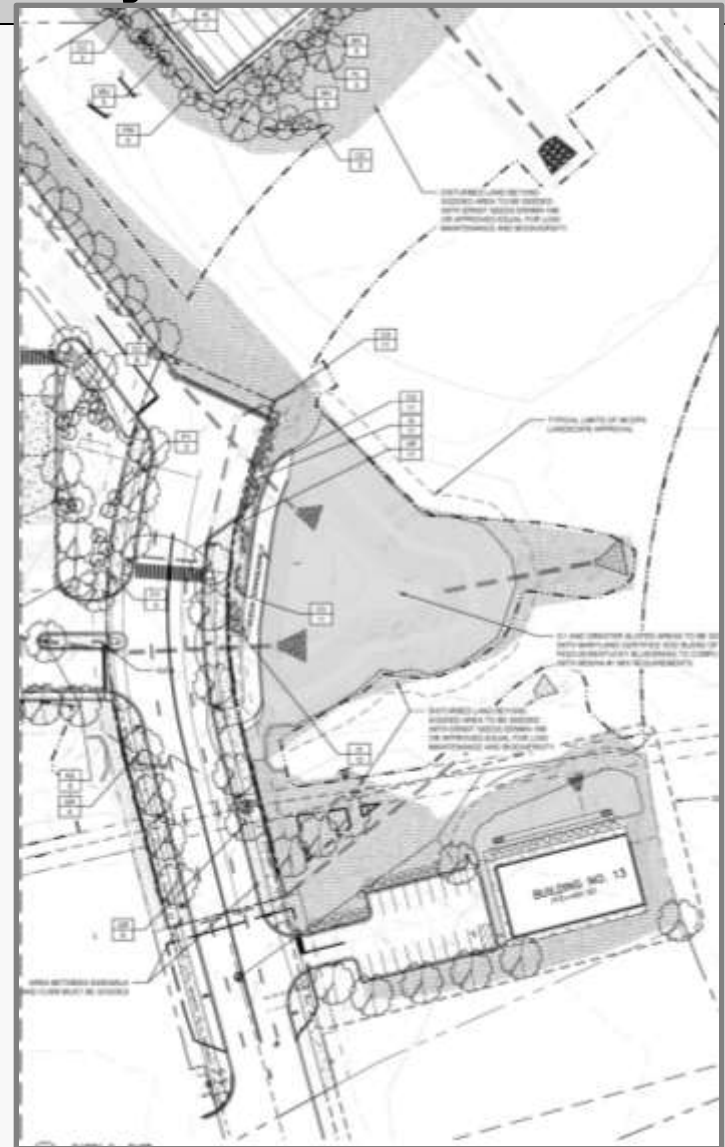
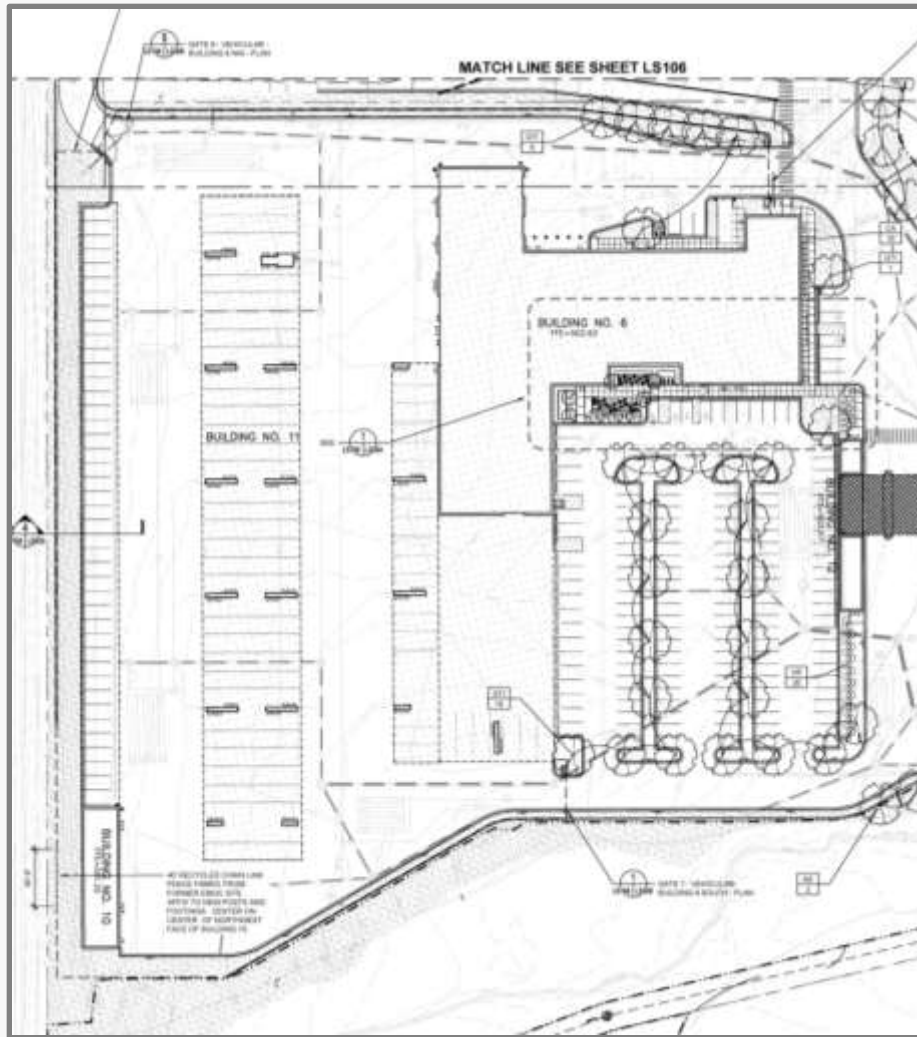
QTY	KEY	GENUS	SPECIES	VARIETY	COMMON NAME	CALIPER	HEIGHT	REMARKS
60	HS	Hemerocallis		'Stella D'Oro'	Stella D'Oro Daylily		1 qt.	12" o.c., full specimen, healthy, vigorous, well-rooted and established
60	LM	Liriope	muscaria	'Big Blue'	Big Blue Liriope		1 qt.	12" o.c., full specimen, healthy, vigorous, well-rooted and established
400	LS	Liriope	spicata		Lillyturf		1 qt.	12" o.c., full specimen, healthy, vigorous, well-rooted and established
16	PC	Parthenocissus	quinquefolia		Virginia Creeper		4' min.	#5 container, 4 stems minimum. Healthy, vigor, well rooted.



# Landscape Plan – Casey 7



# Landscape Plan – Casey 6



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# Landscape Plan – Roberts Oxygen



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# Plant Images – Salt Barn



Betula nigra



Crataegus phaenophyrum



Acer saccharum

Cercis canadensis



er - E

quipr

# Plant Images – Salt Barn



Magnolia virginiana



Pseudotsuga menziesii



Picea abies



Tsuga canadensis



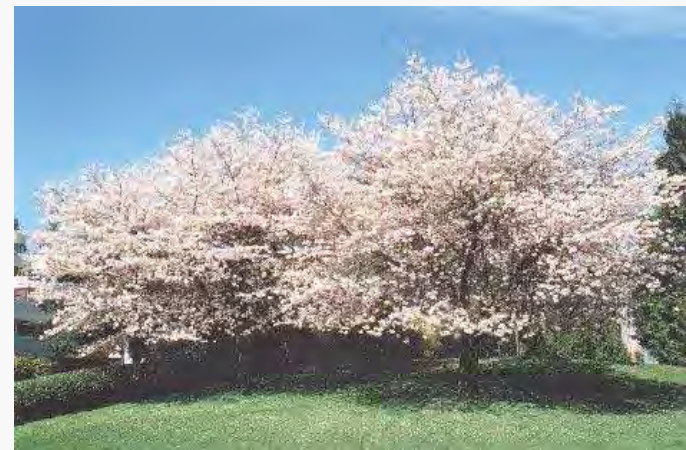
Platanus acerifolia



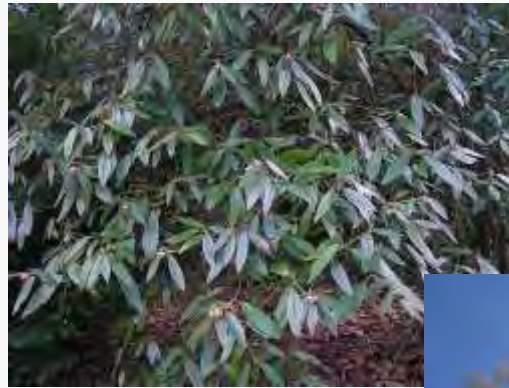
# Plant Images – Road Side



*Ilex opaca*



*Prunus yedoensis*



*Viburnum x pragense*



*Viburnum rhytidophyllum*



*Quercus coccinea*

